

WASTEBOOK

THE FARCE AWAKENS

8 SHEEP IN MICROGRAVITY

Colorado
NASA
\$1.2 MILLION

Hey diddle, diddle, the cat and the fiddle;

The *sheep* jumped over the moon?

NASA isn't planning to launch sheep into space, but the agency has rounded up a herd of sheep as part of a study to "mimic the impact of space travel on bones to better understand bone health and healing."ⁱ The three year project, which is costing taxpayers \$1.2 million, is being conducted at Colorado State University (the school's mascot coincidentally is a sheep).ⁱⁱ

The sheep aren't floating around inside an anti-gravity chamber or on the International Space Station. Instead, the back leg of each sheep was put in a brace that kept it from bearing weight, simulating the effects of microgravity.ⁱⁱⁱ

During Phase 1 of the study, 23 sheep were put in the microgravity brace for eight weeks and monitored by orthopedic surgeons to "provide pain relief when necessary."^{iv v}

"Because the bone was isolated from any gravitational forces, the research team was able to discern that the sheep's bone density decreased—as did the load required to fracture the bone. The weakened bone could break more easily," the researchers reported.^{vi}

The second phase of the study "focused on bone regeneration in the absence of gravity." The microgravity-simulating brace was attached to 20 sheep for three weeks. Then veterinary orthopedic surgeons removed part of bone in the sheep's leg that had been suspended.^{vii} The brace was then reattached to the sheep's leg to observe how the bones healed in simulated microgravity over four weeks.^{viii}

"We found that it definitely does slow down the healing," said Ross Palmer, one of the researchers involved in the study. Palmer says "although this project is a niche application for NASA, there's also a massive potential benefit for the greater population."^{ix}

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- ⁱ “Sheep Helping NASA Prepares for Trip to Mars,” American Sheep Industry Association, February 21, 2014; https://www.sheepusa.org/NewsMedia_WeeklyNewsletter_2014_February_February212014_SheepHelpingNasaPreparesForTripToMars .
- ⁱⁱ Kortny Rolston, “Bones In Space: Researchers study effects of microgravity on astronauts’ bones on missions to Mars,” Colorado State University Magazine, Fall 2014; <http://magazine.colostate.edu/issues/fall-2014/bones-in-space/> .
- ⁱⁱⁱ “Sheep Helping NASA Prepares for Trip to Mars,” American Sheep Industry Association, February 21, 2014; https://www.sheepusa.org/NewsMedia_WeeklyNewsletter_2014_February_February212014_SheepHelpingNasaPreparesForTripToMars .
- ^{iv} “Discoveries: Space sheep,” BizWest, February 21, 2014; <http://bizwest.com/discoveries-space-sheep/> .
- ^v “Discoveries: Space sheep,” BizWest, February 21, 2014; <http://bizwest.com/discoveries-space-sheep/> .
- ^{vi} “Sheep Helping NASA Prepares for Trip to Mars,” American Sheep Industry Association, February 21, 2014; https://www.sheepusa.org/NewsMedia_WeeklyNewsletter_2014_February_February212014_SheepHelpingNasaPreparesForTripToMars .
- ^{vii} “Discoveries: Space sheep,” BizWest, February 21, 2014; <http://bizwest.com/discoveries-space-sheep/http://bizwest.com/discoveries-space-sheep/?refresh=1> .
- ^{viii} “Discoveries: Space sheep,” BizWest, February 21, 2014; <http://bizwest.com/discoveries-space-sheep/> .
- ^{ix} “Discoveries: Space sheep,” BizWest, February 21, 2014; <http://bizwest.com/discoveries-space-sheep/> .
- ^x Contract information for NASA grant NNX11AQ81G, USAspending.gov, accessed October 20, 2015; <https://www.usaspending.gov/transparency/Pages/TransactionDetails.aspx?RecordID=0E408A43-45D0-4B33-87E7-2CE1DD32FE8E&AwardID=44196563&AwardType=C> .
- ^{xi} Kortny Rolston, “Bones In Space: Researchers study effects of microgravity on astronauts’ bones on missions to Mars,” Colorado State University Magazine, Fall 2014; <http://magazine.colostate.edu/issues/fall-2014/bones-in-space/> .
- ^{xii} “NASA Study Provides New Findings On Protecting Astronauts' Bones Through Diet And Exercise,” NASA website, August 24, 2012; http://www.nasa.gov/home/hqnews/2012/aug/HQ_12-291_ISS_Bone_Density.html .
- ^{xiii} “NASA Study Provides New Findings On Protecting Astronauts' Bones Through Diet And Exercise,” NASA website, August 24, 2012; http://www.nasa.gov/home/hqnews/2012/aug/HQ_12-291_ISS_Bone_Density.html .
- ^{xiv} Senator Tom A. Coburn, M.D., “Wastebook 2013,” December 2013.
- ^{xv} “‘Anti-Gravity’ Treadmills Speed Rehabilitation,” Spin Off, NASA Publications and Graphics Department, 2009; <http://spinoff.nasa.gov/Spinoff2009/pdf/spinoff2009.pdf> .